

REMARKS

Reconsideration of this application is respectfully requested.

A. Cross-reference to related applications

The Applicants wish to draw the Examiner's attention to the Applicants' related co-pending applications and issued patents (see revised Appendix A) directed to nanoparticles and methods of preparation and use thereof.

B. Status of the claims

Claims 433, 435-443, and 445-461 are pending in this application.

C. Obviousness-type double patenting rejection

Claims 433 and 435-439 stand provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 5-9 of U.S. Patent No. 6,682,895. A terminal disclaimer is attached. Accordingly, withdrawal of the rejection is in order and is respectfully requested.

D. Rejection under 35 U.S.C. section 102(e) or alternatively under 103(a) based on Kausch and Yguerabide

As a threshold matter, the Federal Circuit has stated that for prior art to anticipate under section 102, every element of the claimed invention must be identically disclosed in a single reference. Corning Glass Works v. Sumitomo Electric, 9 U.S.P.Q.2d 1962, 1965 (Fed. Cir. 1989). The exclusion of a claimed element, no matter how insubstantial or obvious, from a reference is enough to negate anticipation. Connell v. Sears, Roebuck & Co., 220 U.S.P.Q 193, 1098 (Fed. Cir. 1983).

Likewise, the Federal Circuit reiterated the manner in which obviousness rejections are to be reviewed. Where claimed subject matter has been rejected as obvious in view of a combination of prior art references, "a proper analysis under § 103 requires, *inter alia*, consideration of two factors: (1) whether the prior art would have suggested to those of ordinary skill in the art that they should make the claimed composition or device, or carry out the claimed process; and (2) whether the prior art would also have revealed that in so making or carrying out,

those of ordinary skill would have a reasonable expectation of success." *In re Vaeck*, 947 F.2d 488, 493, 20 U.S.P.Q.2d 1438, 1485 (Fed. Cir. 1991), citing *In re Dow Chemical Co.*, 837 F.2d 469, 473, 5 U.S.P.Q. 2d 1529, 1531 (Fed. Cir. 1988).

Contrary to the Examiner's position, the Applicants submit that neither Kausch nor Yguerabide teach or suggest the Applicants' presently claimed invention.

1. Kausch

Claims 433, and 435-461 stand rejected under 35 USC section 102(e) as anticipated by or, in the alternative, under 35 USC section 103(a) as obvious over Kausch et al. (U.S. Patent no. 5,665,582)("Kausch"). The Examiner alleged that Kausch disclosed a method for isolating and sorting biological materials and points to the abstract, col. 4-10, 17-19, 24 and Examples 1, 2 and 4-8 for support. The Applicants respectfully traverse these rejections.

The Applicants respectfully submit that the Examiner's reliance on Kausch is misplaced as Kausch does not support the Examiner's assertions. Kausch described a method for isolating biological materials. Kausch first anchors the biological material onto a solid support such as a glass slide or coverslip. The anchored biological material is then labeled with a binding composition and magnetic particles. The labeled biological material is then released from the support and the release material is then sorted by a magnetic force. The Examiner's cited passages of the Kausch support the aforementioned method. See abstract and cols. 4-10, particularly col. 6, lines 24-44 and col. 9, lines 44 to col. 10, line 16. Example 1 described isolation and anchoring of mouse DNA onto glass coverslips and use of magnetic particles to sort out the DNA. See col. 28, line 51 to col. 29, line 3. Example 2 also described anchoring chromosomes onto an alginate cushion, followed by detachment of the chromosomes and sorting using magnetic particles. Examples 4 (col. 39 – use of magnetic particles for sorting), 5 (col. 44 – preparation of magnetic particles), 6 (cols. 44 and 45 – conventional flow cytometry), 7 (cols. 45-50 – anchoring biological material to support, detachment of biological material from support, and sorting by magnetic particles) and 8 (cols. 50-52 – anchoring biological material to support, detachment of biological material from support, and sorting by magnetic particles). Indeed, Kausch specifically stated the following:

An important and unique aspect of this invention is that materials are labeled while they are anchored to a solid support, and then released to facilitate sorting. Another important aspect is that the indicator used is small relative to the biological material so that steric hinderance is not a problem, cross-aggregation is minimized, the structure of the biological material is preserved, and the resolution of the signal/target is improved.

See col. 10, lines 9-17. Thus, Kausch teaches a method that is remote from the present invention in that his method employs a different process for separating target molecules. While Kausch describes binding compositions that employ various labels or indicators such as fluorescent labels and colloidal gold, a disclosure of colloid gold as a label is not a disclosure or suggestion of the presently claimed invention. Indeed, Kausch makes a point that the use of indicators is such that cross-aggregation is minimized, thus teaching away from the presently claimed invention. Hence, there is no discussion or suggestion of any method in Kausch for separating out one or more types of selected nucleic acids from a sample via the aggregation and precipitation of nanoparticle-based complexes as presently claimed.

Accordingly, withdrawal of the section 102(e) and alternative section 103(a) rejection of the claims based on Kausch is in order and is respectfully requested.

2. Yguerabide

Claims 433, and 435-461 stand rejected under 35 U.S.C. section 102(e) as being anticipated by or, in the alternative, under 35 U.S.C. section 103(a) as obvious in view of Yguerabide (U.S. Patent No. 6,214,560) ("Yguerabide"). Specifically, the Examiner alleged that the presently claimed invention is anticipated or obvious because Yguerabide allegedly disclosed a method for detecting analytes and particle surface density. Applicants respectfully traverse and submit that Yguerabide cannot be applied to support an anticipation and/or obviousness rejection against the claims.

It should be noted that the Examiner has alleged teachings of detecting methods allegedly found on col. 74. While Yguerabide relates to detection of target analytes using bound particles, his focus is strictly on detection, not separation of target nucleic acids by aggregation and precipitation of nanoparticle-based complexes. Yguerabide does not teach or suggest any

method for separating out one or more types of selected nucleic acids from a sample via the aggregation and precipitation of nanoparticle-based complexes as presently claimed. Nor does Yguerabide teach that it would be possible to do. Indeed, Yguerabide is completely silent with respect to aggregating and precipitating out nanoparticle-based complex in a method to separate out target nucleic acids.

Furthermore, the Examiner also alleged teachings of "particle surface density" in the '560 patent. The discussion is allegedly found starting in column 82, line 35, in Yguerabide. In column 83, lines 11-21, Yguerabide discusses that such particles can be metal-like particles. Column 83 provides further discussion regarding particle size and particle binding to a surface. There is no discussion of any surface density of oligonucleotides present on the surface of the particles anywhere in Yguerabide.

Accordingly, withdrawal of the section 102(e) and alternative section 103(a) rejections of the claims based on Yguerabide are in order and is respectfully requested.

E. Conclusion

The Applicants respectfully submit that the claims in this application are in allowable condition and request a Notice to this effect.

Reconsideration of this application is respectfully requested and a favorable determination is earnestly solicited. The Examiner is invited to contact the undersigned representative if the Examiner believes that this would be helpful in expediting the prosecution of this application.

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Respectfully submitted,


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APPENDIX A

ATTY Case No.	Serial No./ Filing Date	Inventors/Title	Status
00-653-G	U.S. 10/794,741 Filed 3/5/04	Mirkin, Letsinger, Mucic, Storhoff, Elghanian, Taton, Garamella, Li, Park/ NANOPARTICLES HAVING OLIGONUCLEOTI DES ATTACHED THERE TO AND USES THEREFORE	PENDING
00-713-B1	09/923,625 Filed 8/7/01	Mirkin, Letsinger, Mucic, Storhoff, Elghanian/ NANOPARTICLES HAVING OLIGONUCLEOTI DES ATTACHED THERE TO AND USES THEREFOR	U.S. Patent no. 6,773,884, issued 8/10/04
00-713-C	09/344,667, filed 6/25/99	Mirkin, Letsinger, Mucic, Storhoff, Elghanian/ NANOPARTICLES HAVING OLIGONUCLEOTI DES ATTACHED THERE TO AND USES THEREFORE	U.S. Patent No. 6,361,944, issued 3/26/02
00-713-I	U.S.S.N 09/603,830 Filed 6/26/00	Mirkin, Letsinger, Mucic, Storhoff, Elghanian, Taton; NANOPARTICLES HAVING OLIGONUCLEOTI DES ATTACHED THERE TO AND USES THEREFOR	U.S. Patent No. 6,506,564, issued 1/14/03
00-713-I-1	09/961,949 9/20/01	Mirkin, Letsinger, Mucic, Storhoff, Elghanian, Taton;	U.S. Patent No. 6,582,921, issued June 24, 2003

ATTY Case No.	Serial No./ Filing Date	Inventors/Title	Status
		NANOPARTICLES HAVING OLIGONUCLEOTI DES ATTACHED THERETO AND USES THEREFOR	
00-713-I-2	09/957,318 9/20/01	See 00-713-I-1	U.S. Patent No. 6,759,199, issued 7/6/04
00-713-I-3	09/957,313 9/20/01	See 00-713-I-1	U.S. Patent No. 6,645,721, issued 11/11/03
00-713-I-4	09/966,491 9/28/01	See 00-713-I-1	U.S. Patent No. 6,610,491, issued August 26, 2003
00-713-I-5	09/966,312 9/28/01	See 00-713-I-1	U.S. Patent No. 6,673,548, issued January 6, 2004
00-713-I-6	09/967,409 9/28/01	See 00-713-I-1	U.S. Patent No. 6,740,491, issued May 24, 2004
00-713-I-7	09/974,500 10/10/01	See 00-713-I-1	U.S. Patent No. 6,709,825, issued March 23, 2004
00-713-I-8	09/974,007 10/10/01	See 00-713-I-1	PENDING
00-713-I-9	09/973,638 10/10/01	See 00-713-I-1	ALLOWED
00-713-I-10	09/973,788 10/10/01	See 00-713-I-1	U.S. Patent No. 6,720,411, issued April 13, 2004
00-713-I-11	09/975,062 10/11/01	See 00-713-I-1	U.S. Patent No. 6,677,122, issued January 13, 2004
00-713-I-12	09/975,376 10/11/01	See 00-713-I-1	PENDING
00-713-I-13	09/975,384 10/11/01	See 00-713-I-1	PENDING

ATTY Case No.	Serial No./ Filing Date	Inventors/Title	Status
00-713-I-14	09/975,498 10/11/01	See 00-713-I-1	ALLOWED
00-713-I-15	09/975,059 11/11/01	See 00-713-I-1	ALLOWED
00-713-I-16	09/976,601 10/12/01	See 00-713-I-1	ALLOWED
00-713-I-17	09/976,968 10/12/01	See 00-713-I-1	ALLOWED
00-713-I-18	09/976,971 10/12/01	See 00-713-I-1	U.S. Patent No. 6,682,895, issued 1/27/04
00-713-I-19	09/976,863 10/12/01	See 00-713-I-1	PENDING
00-713-I-20	09/976,577 10/12/01	See 00-713-I-1	U.S. Patent No. 6,720,147, issued April 13, 2004
00-713-I-21	09/976,618 10/12/01	See 00-713-I-1	U.S. Patent no. 6,812,334, issued Nov. 2, 2004
00-713-I-22	09/981,344 10/15/01	See 00-713-I-1	U.S. Patent No. 6,777,186, issued August 17, 2004
00-713-I-23	09/976,900 10/12/01	See 00-713-I-1	ALLOWED
00-713-I-24	09/976,617 10/12/01	See 00-713-I-1	U.S. Patent No. 6,730,269, filed May 4, 2004
00-713-I-25	09/976,378 10/12/01	See 00-713-I-1	PENDING
00-713-i-26	10/410,324 04/10/03	See 00-713-I-1	PENDING
00-713-L	U.S.S.N. 09/693,005	Mirkin, Letsinger, Mucic, Storhoff,	U.S. Patent No. 6,495,324, issued

ATTY Case No.	Serial No./ Filing Date	Inventors/Title	Status
	Filed 10/20/00	Elghanian/ NANOPARTICLES HAVING OLIGONUCLEOTI DES ATTACHED THERETO AND USES THEREFORE	12/17/02
00-713-M	U.S.S.N. 09/693,352 Filed 10/20/00	Mirkin, Letsinger, Mucic, Storhoff, Elghanian/ NANOPARTICLES HAVING OLIGONUCLEOTI DES ATTACHED THERETO AND USES THEREFORE	U.S. Patent No. 6,417,340, issued 7/9/02
00-714-G	U.S. 09/830,620 Filed 8/15/01	Mirkin, Nguyen/ NANOPARTICLES WITH POLYMER SHELLS	PENDING
00-715-A	U.S. 09/760,500 Filed 1/12/01	Mirkin, Letsinger, Mucic, Storhoff, Elghanian, Taton; Garamella, Li/ METHOD OF ATTACHING OLIGONUCLEOTI DES TO NANOPARTICLES AND PRODUCTS PRODUCED THEREBY	U.S. Patent No. 6,767,702, issued July 27, 2004
00-715-B	U.S. 10/716,829 Filed 11/18/03	Mirkin, Letsinger, Mucic, Storhoff, Elghanian, Taton; Garamella, Li/ METHOD OF ATTACHING OLIGONUCLEOTI DES TO NANOPARTICLES AND PRODUCTS PRODUCED THEREBY	Pending

ATTY Case No.	Serial No./ Filing Date	Inventors/Title	Status
00-1085-A	U.S.S.N. 09/820,279 Filed 3/28/01	Mirkin,Letsinger, etc./ METHOD AND MATERIALS FOR ASSAYING BIOLOGICAL MATERIALS	U.S. Patent No. 6,750,016, issued June 15, 2004
00-1085-G	U.S.S.N. 10/640,618 Filed 8/13/03	Mirkin,Letsinger, etc./ METHOD AND MATERIALS FOR ASSAYING BIOLOGICAL MATERIALS	Pending
00-1086-A	U.S. 09/903,461 Filed 7/11/01	Letsinger, Garimella/ METHOD OF DETECTION BY ENHANCEMENT OF SILVER STAINING	U.S. Patent No. 6,602,669, Filed 8/5/03
00-1272-C	U.S.S.N. 10/008,978 Filed 12/7/01	Mirkin, Letsinger, Mucic, Storhoff, Elghanian, Taton, Garimella, Li, Park, Lu/ NANOPARTICLES HAVING OLIGONUCLEOTI DES ATTACHED THERETO AND USES THEREOF	ALLOWED
01-565-A	USSN 10/125,194 Filed 4/18/02	Mirkin, Nguyen, Watson, Park/ OLIGONUCLEOTI DE-MODIFIED ROMP POLYMERS AND CO- POLYMERS	PENDING
01-599-A	U.S.S.N. 10/291,291 Filed 11/08/02	Storhoff/NOVEL THIOL-BASED METHOD FOR ATTACHING OLIGONUCLEOTI DES TO NANOPARTICLES	PENDING
01-661-A	U.S.S.N.	Mirkin, Cao, Jin/	PENDING

ATTY Case No.	Serial No./ Filing Date	Inventors/Title	Status
	10/034,451 Filed 12/28/01	DNA-MODIFIED CORE-SHELL AG/AU NANOCRYSTALS	
01-661-C	U.S.S.N. 10/153,483 Filed 5/22/02	Mirkin, Cao, Jin/ DNA-MODIFIED CORE-SHELL AG/AU NANOCRYSTALS	PENDING
01-661-E	U.S.S.N. 10/397,579 3/26/03	Mirkin, Cao, Jin/ DNA-MODIFIED CORE-SHELL AG/AU NANOCRYSTALS	PENDING
01-1565-A	U.S.S.N. 10/266,983 Filed 10/08/02	Park, Taton, Mirkin/ARRAY- BASED ELECTRICAL DETECTION OF DNA USING NANOPARTICLE PROBES	PENDING
01-1633-A	U.S.S.N. 10/266,983 Filed 10/8/02	Park, Taton, Mirkin/NANOPARI CLES HAVING OLIGONUCLEOTI DES ATTACHED THERE TO AND USES THEREFOR	PENDING
01-1705-A	U.S.S.N. 10/108,211 Filed 3/27/02	Nam, Park, Mirkin/BIO- BARCODES BASED ON OLIGONUCLEOTI DE-MODIFIED NANOPARTICLES	PENDING
02-338-B	USSN 10/172,428 Filed 6/14/02	Cao, Jin, Nam, Mirkin/MULTIHA NNEL DETECTION USING NANOPARTICLE PROBES WITH RAMAN SPECTROSCOPIC	PENDING

ATTY Case No.	Serial No./ Filing Date	Inventors/Title	Status
		FINGERPRINTS	
02-338-C	10/431,341 5/7/03	Cao, Jin, Nam, Mirkin/MULTICHAN- NEL DETECTION USING NANOPARTICLE PROBES WITH RAMAN SPECTROSCOPIC FINGERPRINTS	PENDING
02-1227-A	10/735,357 Filed 12/12/03	DIRECT SNP DETECTION WITH UNAMPLIFIED NUCLEIC ACID USING NANOPARTICLE PROBES	PENDING
03-214-A	10/789,831 Filed 2/27/04	LABEL-FREE GENE EXPRESSION PROFILING WITH UNIVERSAL NANOPARTICLE PROBES IN MICROARRAY ASSAY FORMAT	PENDING
03-466-C	10/854,848 Filed 5/27/04	METHOD FOR DETECTING ANALYTES BASED ON EVANESCENT ILLUMINATION AND SCATTER- BASED DETECTION OF NANOPARTICLE PROBE COMPLEXES	PENDING
03-666-E	10/877,750 Filed 6/25/04	BIOBARCODE	PENDING